

Claims

1. A lubricant composition for use in a rotary vane compressor has a base oil component that comprises an alkylbenzene as a major component thereof and a polyol ester as a minor component thereof.
2. A lubricant composition according to claim 1 in which the base oil component comprises at least 55% by weight of alkylbenzene and at most 45% by weight of a polyol ester; more preferably between 55% and 75% by weight of alkylbenzene and between 45% and 25% by weight of polyol ester and, especially, between 60% and 75% by weight of alkyl benzene and between 45% and 25% by weight of polyol ester.
3. A lubricant composition according to claim 1 or claim 2 in which the base oil component consists essentially of alkylbenzene and polyol ester.
4. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component is selected from the group consisting of mono-alkylbenzenes, di-alkylbenzenes, di-phenylalkanes and mixtures thereof.
5. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component has a molecular distribution in which at least 80%, and more especially, 100% of the molecular weight fraction is greater than 200; more particularly, at least 75% of the molecular weight fraction is greater than 300; and especially at least 40%, more particularly 50%, of the molecular weight fraction is greater than 350.
6. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component has a molecular distribution in which at least 70% of the molecular weight fraction is below 500, more especially at least 50% of the molecular weight fraction is below 450.
7. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component has a kinematic viscosity of at least 10 cSt, and more preferably at least 25 cSt, but not more than 70 cSt at 40°C and a kinematic viscosity of at least 2 cSt, and more preferably at least 3.5 cSt, but not more than 10 cSt at 100°C.
8. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component has a pour point of less than -10°C more preferably less than -20°C and particularly less than -30°C.
9. A lubricant composition according to any one of the preceding claims in which the alkylbenzene component has an acid number of less than 0.04 mgKOH/g.
10. A lubricant composition according to any one of the preceding claims in which the polyol ester component comprises at least one polyol ester that is a reaction product of a polyhydric alcohol and a monobasic carboxylic acid.
11. A lubricant composition according to any one of the preceding claims in which the polyol ester component is at least one polyol ester that is a reaction product of one or more alcohols selected from neopentylglycol (NPG), trimethylolpropane (TMP) and pentaerythritol (PE) and dimers and trimers thereof and

one or more acids selected from linear and/or branched C₅ to C₁₈ acids, particularly C₅ to C₁₃ acids and more particularly C₅ to C₉ acids.

- 5 12. A lubricant composition according to any one of the preceding claims in which the polyol ester component has a kinematic viscosity of at least 5 cSt but not more than 40 cSt and more preferably less than 25 cSt at 40°C and a kinematic viscosity of at least 1.5 cSt but not more than 5 cSt and more preferably less than 4 cSt, at 100°C.
- 10 13. A lubricant composition according to any one of the preceding claims in which the polyol ester component has a pour point of less than -40°C more preferably less than -50°C and particularly less than -55°C.
- 15 14. A lubricant composition according to any one of the preceding claims in which the polyol ester component has an acid number of less than 0.04 mgKOH/g.
- 20 15. A lubricant composition according to any one of the preceding claims which has a kinematic viscosity of at least 5 cSt but not more than 40 cSt and more preferably less than 25 cSt at 40°C and a kinematic viscosity of at least 2 cSt but not more than 6 cSt and more preferably less than 5 cSt, at 100°C.
- 25 16. A lubricant composition according to any one of the preceding claims which has a pour point of not more than -40°C, preferably not more than -45°C and especially not more than -50°C.
- 30 17. A lubricant composition according to any one of the preceding claims which comprises one or more lubricant additives selected from antioxidants, anti-wear additives, extreme pressure agents, acid scavengers, foaming agents, anti-foaming agents, stabilisers, surfactants, viscosity index improvers, corrosion inhibitors, metal deactivators or passivators, lubricity improvers or oiliness agents and friction modifiers at levels between 0.0001 and 20 weight%, more preferably between 0.01 and 10 weight% more especially between 0.01 and 5 weight% based on the weight of the base oil component.
- 35 18. The use in a rotary vane compressor of a lubricant composition as defined in any one of the preceding claims.
- 40 19. A method of lubricating a rotary vane compressor comprises utilising a lubricant composition as defined in any one of the preceding claims.
- 45 20. A rotary vane compressor charged with a lubricant composition as defined in any one of the preceding claims.
- 50 21. A refrigeration system comprising a rotary vane compressor, said system being charged with a refrigerant comprising a chlorine-free, fluorine-containing heat transfer fluid and a lubricant composition as defined in any one of the preceding claims.
22. A refrigeration system according to claim 21 in which the refrigerant is a hydrofluorocarbon and more preferably is selected from the group comprising difluoromethane (R-32), trifluoromethane (R-23), 1,1,2,2-tetrafluoroethane (R-134), 1,1,1,2-tetrafluoroethane (R-134a), 1,1,1-trifluoroethane (R-143a), 1,1-difluoroethane (R-152a) pentafluoroethane (R-125) and hexafluoroethane (R-116) and mixtures of two or more thereof.

23. A refrigeration system according to claim 22 in which the refrigerant is selected from the group comprising R-32, R-116, R125, R134a, R-143a and mixtures thereof.
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24. In any of claims 18 to 23, the rotary vane compressor being a fixed-vane compressor.